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A STUDY OF THE NEOTROPICAL RAIL *ANUROLIMNAS CASTANEICEPS* (AVES: RALLIDAE) WITH A DESCRIPTION OF A NEW SUBSPECIES

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On noting what appeared to be marked geographic variation among three specimens of the Chestnut-headed Crake, *Anurolimnas castaneiceps*, in the National Museum collections, I assembled a series of 57 skins of the species for comparison. As it is poorly known, I have summarized the little available information on this species from the literature as well as that obtained from the skins and their labels, in addition to investigating geographic variation.

The species was first described as *Porzana castaneiceps* by Sclater and Salvin (1868), who included it in a subgenus *Rufirallus* with the species now known as *Laterallus viridis*, *L. levraudi*, *L. ruber*, and *Amaurolimnas concolor*. The unique type was purchased from Gould and was received by him in 1854 from the Rio Napo, Ecuador. A plate depicting the type was subsequently published by Sclater and Salvin (1869). Salvin (1874:321) later discovered that the type of *Micropygia verreauxi* Bonaparte 1856 (labelled "Perou") was also a specimen of *castaneiceps*. Bonaparte's description, consisting only of the word "*major*," was considered by Salvin to be "utterly insufficient for the recognition of the species," and the name *verreauxi* was regarded by him as a nomen nudum. Whether or not this interpretation is correct, the name *verreauxi* has not been used for the species since, and the name *castaneiceps* definitely should be preserved.

Sharpe (1893) created the genus *Anurolimnas* with *castaneiceps* as the type and only species. Later (1894; 1899) he also included the species *hauxwelli* (= *Laterallus fasciatus*

of current lists) in *Anurolimnas*. Peters (1934) removed *hauxwelli* from *Anurolimnas* and placed it in *Laterallus*, in which he was followed by Hellmayr and Conover (1942) and by most subsequent authors. On the basis of molt pattern, Stresemann and Stresemann (1966) returned *hauxwelli* (= *fasciatus*) to *Anurolimnas*. I, too, feel that it is the closest relative of *A. castaneiceps* (Olson, 1973).

Sharpe (1894) and Goodefellow (1902) listed additional specimens of *A. castaneiceps* from Ecuador. Chapman (1917) extended the known range of the species to La Morelia, Caquetá, Colombia, and later (1926:177) recorded specimens from three new localities in Ecuador, while noting that the La Morelia specimen "is paler throughout than any of our seven Ecuadorean birds, and its more slender feet and tarsi are brownish flesh-color instead of black as in the Ecuadorean specimen [sic]." Although "subsp. nov." was pencilled on the label of the La Morelia specimen, no notice of it as a new subspecies was published. Northern birds are indeed separable from those from most of Ecuador and Peru and may now be known as:

Anurolimnas castaneiceps coccineipes, new subspecies

Holotype: USNM no. 445909, female, from Puerto Venecia, 15 km SE of Florencia, Caquetá, Colombia. Collected 2 June 1952 by M. A. Carriker, Jr. (collector's no. 22878).

Measurements of type: wing (flat) 114, culmen (from base) 22.9, tarsus 49.9, middle toe without claw 36.8 mm.

Diagnosis: Similar to *A. castaneiceps castaneiceps* but in dried skins the tarsi and toes are a conspicuous light yellowish orange rather than dark fuscous (see notes on soft part colors); the plumage is similar to *castaneiceps* but the dorsum is more greenish (less brown), the olive brown of the abdomen is more greenish and tends not to extend as far up the breast as in *castaneiceps*, and the chestnut of the underparts is usually lighter (more orange, less brown).

Range: Southwestern Colombia (Departments of Putumayo and Caquetá) and northeastern Ecuador (northern part of Napo Pastaza Province).

Paratypes: (see specimens listed under distribution).

Etymology: Latin; *coccineus*—red, *pes*—foot.

Individual variation: Measurements (Table 1) disclose no significant size differences between the races of *A. castaneiceps*. Specimens from Caquetá at a glance look smaller than others of *coccineipes* or *castaneiceps* but as measurements do not substantiate this impression, the appearance

TABLE 1. Measurements in millimeters of the two races of *Anurolimnas castaneiceps*.

	Wing (flat)	Culmen (from base)	Tarsus	Middle toe without claw
♂ *castaneiceps* (n = 20)	111–126 (118)	22.1–25.7 (24.1)	47.9–57.1 (52.3)	35.3–40.9 (37.7)
♀ *castaneiceps* (n = 22)	109–124* (115)	21.6–24.9 (22.7)	46.8–53.4 (50.2)	33.8–38.6 (36.3)
♂ *coccineipes* (n = 6)	113–122 (118)	22.5–24.4 (23.4)	49.8–56.1 (52.8)	35.1–37.5 (36.4)
♀ *coccineipes* (n = 7)	112–119 (116)	21.1–24.7 (23.2)	49.9–53.3 (51.3)	35.1–38.8 (36.6)

* Only one female (missexed?) had the wing greater than 119 mm.

is probably due to the "make" of the skins. The admittedly small samples suggest that there is a slight sexual dimorphism in size (males larger). The alleged slenderness (Chapman 1926) of the tarsi and toes of *coccineipes* does not hold up on comparison with adequate material.

There is a considerable amount of variation in the amount of chestnut on the crown and nape of both races that does not appear to be correlated with either age or sex. In some specimens the entire crown and nape is chestnut, while in others the drab dorsal coloration extends up the nape onto the middle of the crown, leaving only the forecrown chestnut. There is every degree of intermediacy, including some birds in which the nape is rufous leaving a spot of olive drab on the posterior crown. The extent of the chestnut on the breast also varies; in some specimens it stops in the middle of the breast and in others it extends farther down onto the abdomen. The latter condition prevails in *coccineipes*, the former in *castaneiceps*.

Within *coccineipes* there is some additional geographic variation. The specimens from Caquetá (including the type and the La Morelia specimen) are lighter both above and below than those from other localities. The single Ecuadorean specimen and those from Putumayo are exceptionally dark above. The throat color varies in both races from chestnut to nearly white, with the lightest individuals from Caquetá.

In a few individuals of both races there are small scattered pale flecks in the primaries and in the primary shafts. In one specimen of *castaneiceps* (AMNH 254919) there is a mottled patch of dark buff on the inner web of the third from the outermost primaries and in one *coccineipes* (FMNH 24993) there is a large pale-colored patch in the fourth from the outermost primaries.

Juvenal plumage: Only one of the specimens seen in this study was in juvenal plumage (ROM 107591, female; Mocoa, Putumayo, Colombia; 7 October 1969). As this plumage has not previously been recorded, it merits description here. The entire breast and abdomen is dull brown like the abdomen of the adult but darker and with a slightly reddish tinge. There are some scattered chestnut feathers of the adult plumage in the cheeks, sides of neck, throat, and breast. The throat is light grayish buff. The dorsum, nape, and crown are brownish olive, darker than in the adult. The forecrown is dull chestnut brown, much duller than in the adult.

Soft part colors: Feet.—As mentioned in the diagnosis above, the foot color differs dramatically in the two races of *A. castaneiceps*. In the nominate race the feet are an apparently unnoteworthy dull color as only four of the 50 specimens examined by me, or for me, had the foot color noted on the label. This was variously recorded as "braun," "olive-green," "gray," or "dark red"—probably reflecting a greater variability in the color terminology of the collectors than in the foot color of the birds. In the dried skins the foot color is dark fuscous, with some individuals a slightly lighter dark-tan color.

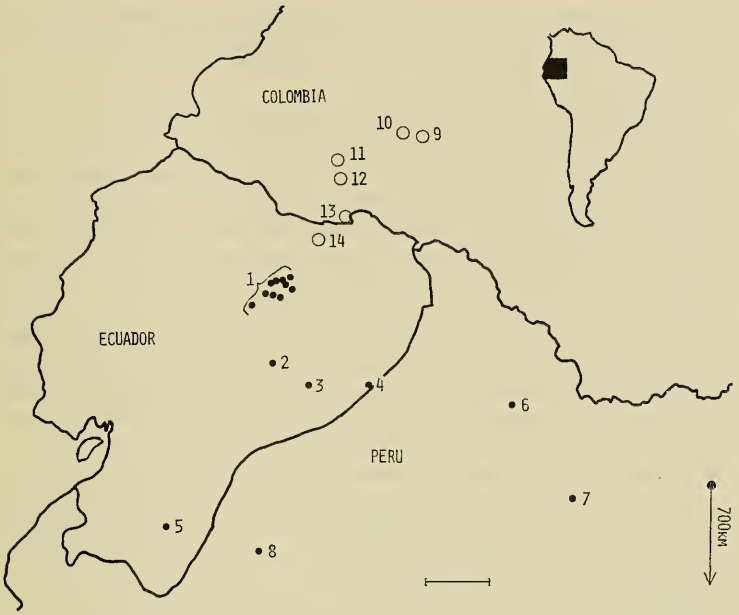

FIG. 1. Distribution of *Anurolimnas castaneiceps castaneiceps* (solid dots) and *Anurolimnas castaneiceps coccineipes*, new subspecies (open circles). Numbers refer to localities mentioned in the text. Balta, Rio Curanja, Peru, the site of the southernmost known specimen of *castaneiceps*, is approximately 700 km south of the origin of the arrow. Scale = 100 km.

In *coccineipes* the foot color is conspicuous and was recorded in 8 of the 13 specimens as "red" (4), "reddish" (3), or "pink" (1). Another specimen (ANSP 164723) is annotated "legs orange-red when received" and is the source of Meyer de Schauensee's (1964, 1970) description of the foot color as "orange-red" in the species as a whole. In dried skins the much lighter colored tarsi, toes, and exposed tibiae of *coccineipes* are so conspicuous that they may be distinguished from *castaneiceps* at a glance. The feet in the dried specimens range in color from light ochraceous yellow to a clear yellow-orange. The plantar surface of the intertarsal joints and the bottoms of the toes are dark in most specimens. The feet of the single juvenile, although recorded on the label as "reddish," are darker and more brownish than in the adults, but are still lighter than in *castaneiceps*.

Bill.—With two exceptions, where the bill color is recorded, it is mentioned only as "black." One specimen (FMNH 17397) is noted as having the "max. black with green below nostril, mand. green with black

point," and another (LSU 35128) as having the bill "pea green with black ridge on culmen." These two descriptions are more accurate, as even in the dried skins of both races, the lighter greenish area below the nostril and on the mandible is evident.

Iris.—The iris in a specimen of *castaneiceps* is described as "dark brown" by Goodfellow (1902) but is not noted at all on the label of the same specimen (AMNH 472029) although the other soft part colors are recorded. The published description in this case may be an error as the iris color is given as "red," "red-orange" or "carminrot" in three specimens of *castaneiceps* and as "red" in three specimens of *coccineipes*. In five other *coccineipes*, including the single juvenile, it is recorded as "yellow" or "yellowish-brown." The discrepancy is possibly due to post-mortem changes. I have noticed in dying individuals of the Giant Cowbird (*Scaphidura oryzivora*) and Ruddy Ground-Dove (*Columbina talpacoti*) that the iris color changed within seconds from bright red, to orange, to pale straw-yellow as the bird died. Perhaps the same phenomenon takes place in *A. castaneiceps*.

Distribution: *Anurolimnas castaneiceps* has a limited range in northwestern South America, as yet being found only in eastern Ecuador, eastern Peru, and southwestern Colombia. In the following paragraphs, the bracketed numbers in boldface refer to the numbered localities in Figure 1.

Specimens from Peru and all but one from Ecuador are of the nominate race, *castaneiceps*. Most of those from Ecuador come from a small area [**1**] in the province of Napo Pastaza, northwest of the upper part of the Rio Napo, including the following localities: Rio Payamino (ANSP 162754—the northernmost record of the race); upper Rio Suno (MCZ 94282); Rio Suno above Avila (AMNH 178890 to 94); Rio Suno (BMNH 1953.68.54 and 55); lower Rio Suno (AMNH 185261, 63, and 64; ANSP 82988); El Loreto [on the Rio Suno] (ANSP 162752); San José (ANSP 162755 and 56) and below San José (AMNH 185265 and 68, MCZ 137751, USNM 323004, MLZOC Ec-A720) are indicated by Chapman (1927, pl. 3) to refer to a "San José de Sumaco" but there is no San José on the Rio Sumaco and the locality refers to San José Viejo on the nearby Rio Suno; Rio Pucuno (MCZ 263758); Concepción [= Cotapino of Norton 1965; on the Rio Pucuno] (FMNH 8027, MLZOC Ec-H1032 and 36); Cerro Galera (ANSP 148244); Archidona (AMNH 472029). A specimen (FMNH 8028) labelled Raya Yaco [= Yacu, which signifies "river" in Quechua], a locality I was unable to find, is probably from this same area, as it was collected by the Olallas on 2 June 1930 and they had been in Concepción on 20 May of the same year. I have also been unable to find the locality of one Ecuadorean specimen (ANSP 148243) labelled "Chaquisca Yacu" but it is probably from somewhere in Napo Pastaza.

Elsewhere in Napo Pastaza there are five specimens of *castaneiceps* from farther south at Sarayacu [**2**] (BMNH 1889.11.20.135 to 137; FMNH 9022 and 9638); one from Montalvo [**3**] (ANSP 162753); and

five from Rio Tigre at the headwaters of the Rio Tigre [4] (FMNH 10772 to 74 and 18382; UMMZ 7330) which is on the present Peruvian border.

A disjunct record is of a specimen (AMNH 166685) taken by G. K. Cherrie in 1920 and marked "Zamora, Rio Zamora, Prov. de Loja" [5]. This is now in the province of Santiago-Zamora, Ecuador, and represents the westernmost known locality for the species. Six specimens collected by the Olallas in 1925 (AMNH 254918, 19, 21, and 23; ANSP 82989; MCZ 137752) are labelled "voca [sic = boca] Rio Cururay" [6], a locality that was in Ecuador but which has been in Peru since the 1942 boundary settlement (Parkes 1970:212). These specimens considerably antedate a Peruvian record of the species from Quistococha, Loreto [7] reported *fide* Koepcke in Meyer de Schauensee (1966). A specimen (AMNH 406826) labelled only "Boca Santiago" may possibly pertain to the mouth of the Rio Santiago [8] emptying into the Rio Marañon, in which case it, too, would have been taken in what is now Peru. A recently collected specimen (LSU 35128) from Balta, on the Rio Curanja, Loreto, Peru, extends the range of the species much farther south than previously known, as this locality is over 700 km south of Quistococha. This indicates that the range of the species is probably much more extensive than as yet known and it no doubt includes westernmost Brazil.

The race *coccineipes* is known from thirteen specimens, all but one from Colombia. In the Department of Caquetá it has been taken 10 km SE of Florencia [9] (MVZ 120452); 15 km SE of Florencia at Puerto Venecia [9] (USNM 445909 and 10); and at La Morelia [10] (AMNH 115701). From the Dapartment of Putumayo there are specimens from Mocoa [11] (ROM 107591); Umbria [12] (FMNH 17397); and Rio San Miguel [13] (ANSP 164723). Also from Putumayo there are four specimens labelled "Guascayaco" (FMNH 24992 and 3; YPM 79034; ROM 101158) and one from "Guayuyaco" (ROM 103820), neither of which names I was able to locate.

The single Ecuadorean specimen of *coccineipes* (LSU 52911) comes from Santa Cecilia [14] on the Rio Aguarico, Napo Pastaza. No more than 50 to 70 km separate this locality from the nearest known occurrence of the nominate race.

Discussion: In none of the specimens examined in this study was there any evidence of intergradation between the two subspecies of *A. castaneiceps*. Physiographic barriers that might have acted to isolate the two races are not apparent. Nor is there any apparent reason why selection should favor such bright, distinctive foot coloration in one population and not in the other. Indeed, as Phillips (1959:24) has remarked, subspecific differences in soft part colors are rare in birds.

Virtually nothing is known of *Anurolimnas castaneiceps* in life. The only comments I have found are those of Goodfellow (1902:230) who remarked that his specimen from Archidona, Ecuador "was shot among the thick undergrowth of the forest," and of Meyer de Schauensee who

gives the habitat in Colombia as "banks of forest streams" (1964:72) or simply "forest" (1970:67). It is an inhabitant of the tropical zone and according to skin labels has been taken at altitudes from 200 to 1500 m. The nest and eggs are apparently unknown. Specimens have been taken during all months of the year. Nine specimens of *coccineipes* have the condition of the gonads noted. The juvenile female, taken in October in Putumayo, was recorded as having the ovary 8×10 mm, while two adult females taken in September and October had ovaries 5×10 and 15×20 mm, respectively. Three males taken in October had testes 2×4, 3×6, and 5×10 mm and thus probably were not breeding. A February female from Caquetá had the largest ovum only 1 mm in diameter. A male and female taken in June in Caquetá were noted as having the gonads enlarged, which, with the October juvenile, are the only possible indications as yet of the breeding season in this species.

Several collectors noted the colloquial names of the species—usually "pituro" or "piturito" but also "pituro grande" and "gallaseta" (= gallacita?). One may imagine that these names apply to a number of other species as well. The vocalizations are unrecorded. The weight of a female *coccineipes* (MVZ 120452) was given as 126.2 g.

Stresemann and Stresemann (1966) noted that the primary molt in this species is ascendent, which was true of the molting specimens I examined. Specimens with primaries in sheaths were represented in the months of February (1), March (2), and August (1).

Nothing else seems to be known of *Anurolimnas castaneiceps*.

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Literature Cited

Bonaparte, C. L. 1856. *In* Comptes Rendus des Seances de l'Acad. des Sci. 43:599.

Chapman, F. M. 1917. The distribution of bird-life in Colombia. Bull. Amer. Mus. Nat. Hist. 36:1–729.

———. 1926. The distribution of bird-life in Ecuador. Bull. Amer. Mus. Nat. Hist. 55:1–784.

Goodfellow, W. 1902. Results of an ornithological journey through Colombia and Ecuador. Ibis, Ser. 8, 2:207–233.

Hellmayr, C. E., and B. Conover. 1942. Catalogue of birds of the Americas. Zool. Ser., Field Mus. Nat. Hist. 23 (Pt. 1, No. 1): 1–636.

Meyer de Schauensee, R. 1964. The birds of Colombia. Livingston Publ. Co., Narberth, Pa. 430 pp.

———. 1966. The species of birds of South America and their distribution. Livingston Publ. Co., Narberth, Pa. 577 pp.

———. 1970. A guide to the birds of South America. Livingston Publ. Co., Wynnewood, Pa. 470 pp.

Norton, D. W. 1965. Notes on some non-passerine birds from eastern Ecuador. Breviora 230:1–11.

Olson, S. L. 1973. A classification of the Rallidae. Wilson Bull. 85: 381–417.

Parkes, K. C. 1970. A revision of the Red-rumped Cacique, *Cacicus haemorrhous* (Aves: Icteridae). Proc. Biol. Soc. Wash. 83: 203–214.

Peters, J. L. 1934. Check-list of birds of the world. Vol. 2. Harvard Univ. Press, Cambridge, Mass. 259 pp.

Phillips, A. R. 1959. The nature of avian species. Journ. Arizona Acad. Sci. 1:22–30.

Salvin, O. 1874. A visit to the principal museums of the United States with notes on some of the birds contained therein. Ibis, Ser. 3, 4:305–329.

Sclater, P. L., and O. Salvin. 1868. Synopsis of the American rails (Rallidae). Proc. Zool. Soc. London. pp. 442–470.

———. 1869. Exotic ornithology. Bernard Quaritch, London. 204 pp, 100 pl.

Sharpe, R. B. 1893. [untitled communication]. Bull. Brit. Ornithol. Club 1:26–29.

———. 1894. Catalogue of the birds in the British Museum. Vol. 23. British Museum (Natural History), London. 353 pp.

———. 1899. A hand-list of the genera and species of birds. Vol. 1. British Museum (Natural History), London. 303 pp.

Stresemann, E., and V. Stresemann. 1966. Die Mauser der Vögel. Journ. Ornithol. Sonderheft 107:1–447.